The Commonwealth of Massachusetts

Department of Public Health
250 Washington Street, Boston, MA 02108

Department of Environmental Protection
1 Winter St., Boston, MA 02108

Post This Notice Near Each Sodium Fluoride Metering Pump.
Do Not Remove or Cover this Notice in Any Way.

Standard Operating Procedure (SOP)
Sodium Fluoride (NaF) Saturators

1) Inspect fluoride-metering pump daily for proper operation and air binding bleed as necessary according to manufacturer's recommendations. Always wear gloves and eye protection for safety. Refer to the material safety data sheet (MSDS) and state DPH fluoridation training course manual for more detailed information on how to properly handle the white fluoride compound.

2) Inspect suction and discharge piping or tubing for leaks, especially at fittings and connections. Tighten or replace as necessary after cleaning up spillage.

3) Record on the official monthly form the gallons of water produced and amount of make-up water used in the last 24-hour period. If the make-up water volume is low or high, investigate as necessary. For example, if low, was the metering pump air-bound, or if high, did the saturator overflow? A rule of thumb is to expect 50-100 gallons or 6 to 13 cubic feet of make-up water consumed per million gallons of water optimally fluoridated.

4) Visually inspect external saturator overflow system for presence of saturated sodium fluoride solution if one has been installed. All systems approved after 1985 must include one. It is advised all systems have one installed. Test float activated valve weekly (by lifting it) during the fill process to insure make-up water shuts off.

5) If well or pump station has been in operation pumping water for at least five to ten minutes, collect a water sample from the state approved representative sample tap. It is usually tapped 100 feet outside the building wall. Test it on your fluoride laboratory tester according to the recommended instruction. Record concentration in parts per million (ppm) fluoride on the official monthly form, rounded off to nearest tenth of a ppm. For example, round off 0.85 ppm as 0.9 ppm. It is encouraged that more than one sample reading be taken daily.

6) Visually or using a calibrated stick check the level or depth of sodium fluoride in the saturator tank. Add 5 to 55 pounds of AWWA and NSF approved sodium fluoride to the saturator top whenever:
A) Less than 10 inches of solid sodium fluoride is present (do not count cloudy portion), level off as needed before measuring with a stick, and
B) The most recent daily fluoride test result at the 100 foot out tap tested 1.0 ppm or less.

7) Always wear rubber gloves and a replaceable filter type respirator when handling or adding sodium fluoride to the saturator. Add the white colored chemical slowly without spilling to minimize dust, and turn off metering pump temporarily for 5 minutes to help avoid air-binding. Clean up any spills and dispose of used bags properly. Refer to material safety data sheet (MSDS) form for more information. Record amount of sodium fluoride added on official monthly form in pounds.

8) Never exceed 2 feet in depth of sodium fluoride or it will jam the system. The amount of sodium fluoride added mainly depends on your water production rate in gallons per day. Sodium fluoride is consumed at a rate of approximately 20 pounds per million gallons or 10 pounds per 500,000 gallons, or 2 pounds per 100,000 gallons.

9) Adjust the metering pump stroke length or strokes per minute adjustment upward or downward to maintain a 1.0 ppm fluoride (average) in the finished water only after maintaining the proper level of sodium fluoride in the saturator. Normally this adjustment is not made often.

10) Store bags of sodium fluoride on pallets off the floor or inside 24 to 36 gallon closed rubber containers to avoid moisture or spillage. Label all bags or containers, "Sodium Fluoride".

11) If a water softener is present on the make-up water line (recommend if total water hardness exceeds 75 ppm), it must be regenerated with sodium chloride according to manufacturer's instructions. If a hardness reduction filter is present on the make-up water line, it must be replaced when spent.

12) Once or twice a year clean out saturator completely according to manufacturer's instructions always wearing gloves, apron, and eye protection. Refill the up-flow type saturator with 200 to 220 pounds of sodium fluoride, and then add make-up water.

13) Check to make sure the metering pumps' spring loaded diaphragm type anti-siphon valves or back pressure valves on the discharge line are present. It must never be removed, to avoid possible siphoning or an overdose of fluoride. If removal is necessary, install a spare immediately! CAUTION-if a spare is not available, shut off the electric power to the metering pump and remove suction line from saturator until the anti-siphon valve is replaced.

14) Check monthly the metering pump electric interlock or pacing system to insure the fluoride metering pump shuts down completely when the well or pump station is off line. If not practical, do not perform, and seek state assistance.

15) Any fluoride concentration over 2 ppm must be reported immediately to the DPH and DEP as follows:

Who to Contact	During Working Hours	Outside of Normal Working Hours
DPH	**617-624-6074.** Office of Oral Health	**617-983-6800** (Via the Mass Division of Epidemiology and Immunization Emergency Call Center)
Mass DEP	**Regional Office** or **617-292-5770**	**1-888-304-1133** (via Massachusetts Emergency Management Agency (MEMA))

16) In the event of a fluoride concentration over 4 ppm, shut off the fluoride metering pump immediately until state assistance is available.

17) The recommended optimal fluoride concentration is 1.0 ppm with a permissible increase of 0.2 ppm above or 0.1 ppm below that amount.

18) If you have any questions on this SOP contact Mass. DPH or DEP at the numbers noted above.